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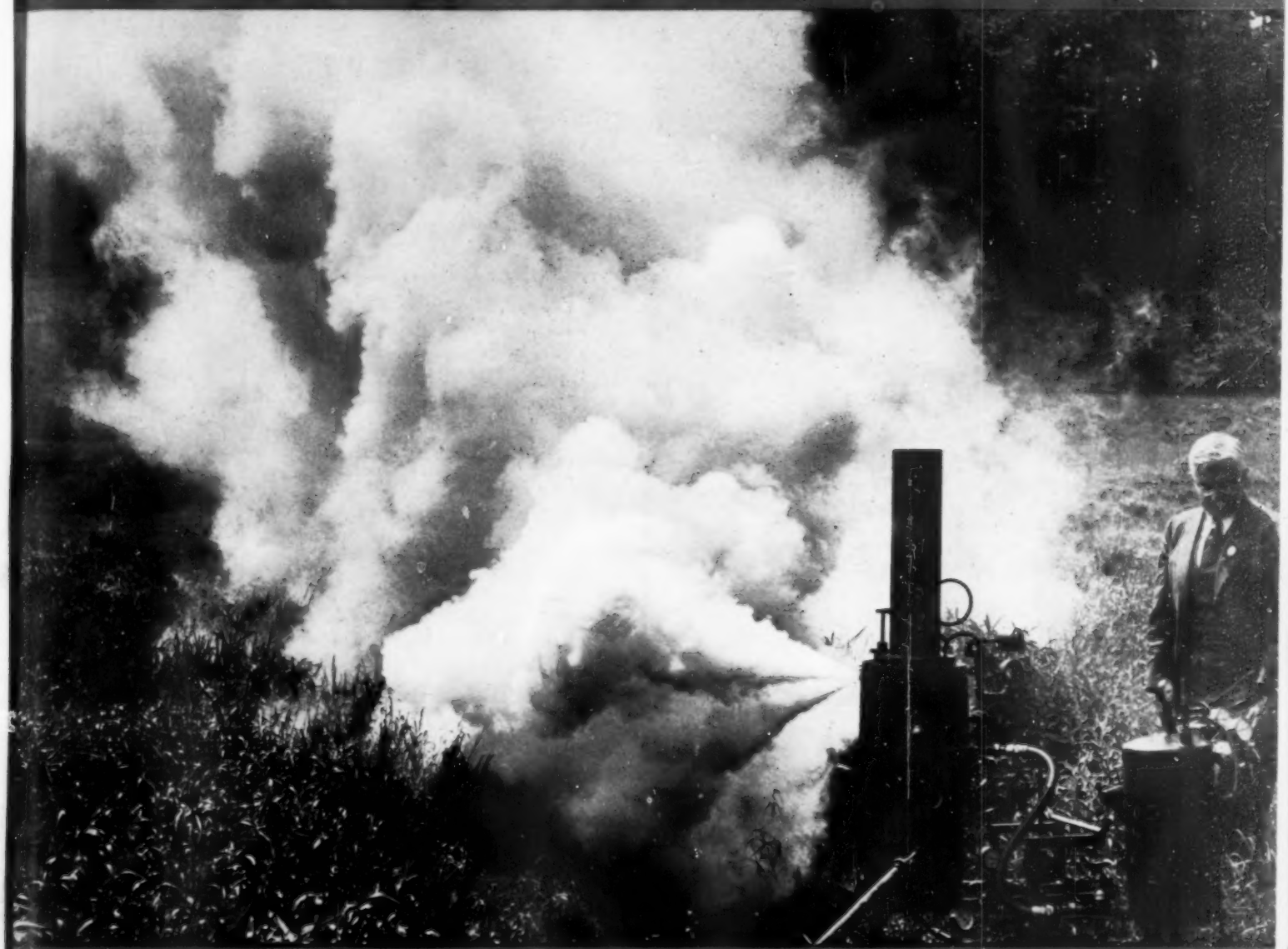
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • FEBRUARY 27, 1943



For Protection

See Page 143

A SCIENCE SERVICE PUBLICATION

Do You Know?

The world knows only one species of *tiger*.

The most concentrated form in which *food* can be supplied is in seeds; in seeds it is much more concentrated than in dehydrated foods.

The outside leaves of cabbage and lettuce, usually discarded, are richer in *vitamin A*, calcium and iron than the blanched inside leaves.

"Army spread" is a combination of creamery butter, fresh cheese curd, and skim-milk powder, with a butter-fat content of not less than 56%.

The capacity for *synthetic nitrogen* manufacture in the United States after the war will be more than twice as great as the consumption for all purposes before the war.

Kangaroo rats, strange desert animals, to all appearances require no moisture from without, subsisting, some scientists explain, on the moisture of their own metabolism.

There were over 900,000 board feet of *lumber* in the first huge raft of Alaska airplane spruce logs floated recently from southeastern Alaska 900 miles to mills in the state of Washington.

A pound of well softened *butter* into which is thoroughly mixed a cup of milk and a cup of water, makes an "extended" butter satisfactory to the taste, but of less nutritional value.

Question Box

Page numbers of Questions discussed in this issue:

ASTRONOMY

How can old sunspots be distinguished from spots in a new cycle? p. 134.

What is the brightest planet in the sky during March? p. 136.

BIOLOGY

What new weapon for fighting disease germs has been discovered in a mold? p. 131.

BOTANY

What flower appears to follow the phases of the moon in its blossom periods? p. 141.

ENGINEERING

How long did it take to build the Alcan Highway? p. 142.

What new device has been developed for the Chemical Warfare Service? p. 143.

Why do Germans have asbestos soles? p. 134.

GENERAL SCIENCE

What is Dr. Conant's five-point plan for future research? p. 131.

What use is now being made of helpful ideas from soldiers in the ranks? p. 140.

INVENTION

What invention makes it possible for upper berth passengers in planes to sit up longer than the occupants of the berths below them? p. 134.

MEDICINE

Of what use are blood cells salvaged from the preparation of blood plasma? p. 138.

How does rationing affect the diabetic patient? p. 131.

What can be done for "pernicious inertia"? p. 134.

What does the presence of cold agglutinins in the blood indicate? p. 141.

What rare metal is being used to patch skulls? p. 143.

What study is being conducted to find the constitutional factors contributing to tuberculosis? p. 133.

METEOROLOGY

To what extent do sunspots affect the earth's weather? p. 135.

NUTRITION

Are sugars and starches necessary in the diet? p. 135.

How does brown sugar differ from white nutritionally? p. 135.

What role will nutrition play in post-war reconstruction? p. 143.

Why do Army specialists need special diets? p. 138.

PALEONTOLOGY

How big is America's largest trilobite? p. 132.

PHYSICS

Which is harder to weigh accurately, an electron or a battleship? p. 132.

PHYSIOLOGY

What effects do cigarettes made from low-nicotine tobacco have on the body? p. 134.

PSYCHIATRY

What must be used as the building stones of a lasting peace? p. 132.

PSYCHOLOGY

How can you tell what baby's cry means? p. 140.

WILDLIFE

What effect has war had on the market for fish? p. 137.

What three products are obtained from muskrats? p. 137.

Why is it a mistaken kindness to feed hay to hungry deer? p. 139.

Most articles which appear in* SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

The *bush fowl* of Guadalcanal lays its eggs in a bed of hot sand or scrapes together a pile of leaves that ferment and produce enough heat to incubate the eggs—and when hatched the birds fly away without ever knowing their parents.

The United States is known to have a natural gas reserve of 86 trillion cubic feet.

Birds weighing as much as 15 pounds have been encountered by airplanes at heights up to 8,000 feet.

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GENERAL SCIENCE

Physics Won't Dominate

In post-war education, physical sciences will maintain advances, President Conant forecasts, but social sciences must catch up for livable world.

➤ THE PHYSICAL sciences, necessarily given priority in present-day training programs to meet the war emergency, will not dominate post-war education, Dr. James B. Conant, president of Harvard University, declared in addresses before the New York Academy of Public Education and the American Philosophical Society. They will maintain the gains they are making, but the social sciences and humanities will have to catch up with them, to maintain a balanced and a liveable world.

The old notion that there is a basic opposition between two kinds of training, and that one kind is parasitic on the other, was decried by the speaker. The real relation, he said, is not one of parasitism but of symbiosis—the kind of thing you have in a lichen, in which two quite different types of organism are mutually beneficial to each other.

Such a symbiosis has long obtained in human affairs, Dr. Conant continued. Historically, the system of political liberalism under which we live has made scientific advance possible; and in turn scientific advances have fed our sense of freedom.

"If we are to have a free society on this continent we must continue to have advances in the fundamental sciences, and these advances in turn can take place only if man is free," he declared. "The symbiosis must continue if this nation is to prosper. . . . Let no man who admires science or extols new industrial techniques look with favor on any abridgment of human liberty unless he wishes to encourage forces which will eventually destroy those things he values most."

While Dr. Conant declined to offer on the spot detailed plans for the post-war world, he did emphasize the necessity for such planning: "We cannot maintain a free society in a world in which we must face the terrible and disrupting burdens of modern war once every generation."

In concluding, he offered a five-point outline of a master plan for future research: (1) Provide an educational system which offers real equality of opportunity. (2) Find the exceptional men among those given this opportunity while they are still in training. (3) Give these men every advantage and facility in the way of machines and helping hands. (4) Be certain that there are many rival and independent groups competing for scientific and technical achievement, and that no group can long perpetuate itself. And finally, (5) Beware in times of peace of coordinating agencies with dictatorial powers—of ideas of a peacetime scientific general staff.

Science News Letter, February 27, 1943

BIOLOGY

New Potent Anti-Disease Weapon Discovered in Mold

➤ A SECOND and more potent weapon against disease germs has been discovered in the mold, Penicillium notatum, which has already yielded the very powerful anti-bacterial substance, penicillin. The second substance from mold, called penatin, is reported by Dr. Walter Kocholaty of the University of Pennsylvania. (*Science*, Feb. 19)

Penatin, he reports, not only is more powerful than penicillin but is active against disease germs which are hardly affected by penicillin. Of 50 disease-causing and non-disease-causing organisms tested, none has been found which would resist the bacteria-stopping action of penatin in dilutions of not less than one to 10,000,000. Some organisms were stopped by penatin in dilutions of one to 400,000,000. Penatin not only stops the growth of organisms but also, though to a lesser extent, can kill them.

At dilutions of one to 12,500,000, in test tube experiments, penatin stopped the growth of diphtheria, anthrax, undulant fever, pneumonia, typhoid, paratyphoid and pus germs, among others.

Relatively large doses injected into the veins of a rabbit and a guinea pig had no obvious ill effects. The anti-bacterial action of penatin is not impeded in 90% serum, Dr. Kocholaty reports, which suggests that it would be as effective against germs in the blood as against the same germs in a test tube. Further experiments on its effect as a remedy for germ diseases and on its toxicity will be reported later.

Science News Letter, February 27, 1943

MEDICINE

Diabetics Need Not Suffer Under Food Rationing

➤ THE 7,500,000 diabetics in the United States, and their friends and relatives, need not worry over any dangerous diet restrictions on the diabetics through food rationing.

The chief problem rationing presents to the diabetic is the matter of getting enough fresh and canned fruits and vegetables. The New York Diabetes Association has proposed that diabetics might turn in their sugar ration cards and receive in their place such special privileges, in the future, as their disease calls for.

OPA officials, however, state that this will not be necessary. There is a provision in the food rationing regulations that diabetics who require added amounts of special foods can get them. All the diabetic need do is take to his local rationing board a certificate from his physician stating the amounts of extra foods he needs and why. Then the diabetic fills out application form

HOMEWARD BOUND—A carrier pigeon, just released by Navy balloonists, takes off for its cotes at the Lakehurst, N. J., Naval Air Station with a message giving the position of the two Navy balloonists.

315, attaches the doctor's certificate, and gives it to the local board. The board then gives him the extra points.

Diabetics usually take extra cream and butter to supply the fuel they miss by not eating sugar or much carbohydrate. But the N. Y. Diabetes Association believes that the diabetic will not need extra cream if sufficient whole milk is available. Oleomargarine and other fats, the association states, may replace butter for fuel needs to the extent advocated for normal persons.

Each diabetic, of course, must have his diet prescribed by his physician, but in general the above statements hold true for diabetic food requirements.

Science News Letter, February 27, 1943

PHYSICS

Hard to Weigh a Battleship

Largest and smallest things are hardest to weigh. Mass of an electron can be determined with accuracy of only one part in a hundred.

➤ THE 52,000-TON full-load displacement of the new "Iowa" class battleships may actually be as much as 52,052 tons or only 51,948 tons without anybody knowing the difference. A battleship cannot be weighed with an accuracy closer than one part in a thousand, Dr. Harvey L. Curtis of the National Bureau of Standards stated in his address as retiring president of the Washington Academy of Sciences. By contrast, a kilogram weight (basic unit of the metric system, a little more than two English pounds) can be compared with another with an accuracy a little less than one part in a billion.

Biggest things and smallest things are most difficult to measure and weigh, Dr. Curtis told his audience. A battleship is about the biggest lump of matter which human means can weigh directly. In the opposite direction, the antipneumococcus germ or virus particle is among the smallest of living things. It would require 1,000,000,000,000,000,000,000,000,000 (one octillion) of these to weigh as much as a blue whale, largest of all animals. Far below this tiniest of germs, however, is the electron, smallest of all known objects. Its mass has been determined within an error of one per cent—but this is an accuracy of only one part in a hundred, as compared with one in a billion when kilogram weights are being compared.

As with weights, so with lengths. The standard meter bar (the laboratory's "yardstick") can be compared with another meter bar with an accuracy of one part in ten million, said Dr. Curtis; perhaps under very favorable conditions to one part in fifty million. The error amounts to something between a twentieth and a hundredth of the diameter of a fine spiderweb.

Accuracy of comparisons falls off with either increase or decrease in lengths being compared. The standard base line used in the most accurate kind of surveying is usually 1,000 meters. Its accuracy, however, can be determined only to one part in a million, as compared with one in ten million for the single meter. The millimeter (a thousandth of a meter) can be determined with an accuracy of only one part in a few hundred thousand. The distance between the nuclei of a hydrogen molecule is known only to one part in a thousand, while the diameter of a proton, the smallest known object, has not yet been determined within an error of less than one part in ten.

Science News Letter, February 27, 1943

PSYCHIATRY

Building-Stones of Peace Proposed by Psychiatrists

➤ CONSCIENCE and intelligence are the forces which psychiatrists believe can be used as building stones for lasting peace, it appears from pre-convention discussion as members of the American Orthopsychiatric Association gathered in New York for their annual meeting.

Feelings of insecurity, anxiety and aggression may lead nations into the disaster of war, as they lead individuals into personal disaster such as disordered mentality. Psychiatrists treating victims of mental disorder build on the individual patient's inner resources of personality, chiefly his conscience and intelligence, in helping him to recover his equilibrium.

They hope, Dr. Helen Langner, chairman of the association's publicity committee, explained, that the same resources, conscience and intelligence, can be used to help a group of people, or a nation, overcome the emotional forces that promote war.

The present century, Dr. Langner pointed out, has been characterized by two world wars and by progress in deep personality exploration with the possibility of counteracting the forces that lead to war.

The importance of intelligence and thinking for directing one's emotional life is being stressed more and more by psychiatrists, Dr. Langner said.

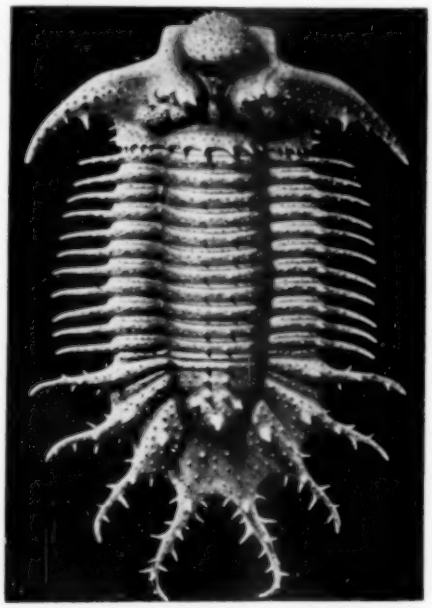
New trend in treatment of mental disorder is the use of group therapy, that is, treating patients in a group rather than singly. Developed originally as a more effective means for treating certain kinds of patients, group therapy is proving increasingly useful because of the war-caused shortage of psychiatric personnel.

Science News Letter, February 27, 1943

PALEONTOLOGY

Specimen of America's Biggest Trilobite Found

➤ THE ONLY KNOWN specimen of *Terataspis,* America's largest trilobite, that retains the head, body, and tail was discovered last fall near Buffalo by Irving G. Reimann, curator of geology and



GIANT TRILOBITE — This new restoration of Terataspis, biggest of its family known from this continent, has just been placed on display at the Buffalo Museum of Science.

paleontology, Buffalo Museum of Science. The specimen, along with its restoration, is now on display in that Museum. Thirteen inches long, about half the maximum length attained by the species, the specimen shows the underside of the left half of the animal, the right half being missing.

This fossil marine animal, dating back to Devonian times, about 250 million years ago, was found in the Onondaga limestone of the Fogelsanger Quarry in Buffalo's suburb, Williamsville. Since very little of the specimen showed when it was found, much laborious chipping was involved to bring it to light. It has created great interest because previously no uncrushed body segments were known, and restorations had been made only from fragments.

The restoration pictured on page 132 was made by Paul Marchand, staff artist, under Mr. Reimann's direction. It is 20 inches long.

Science News Letter, February 27, 1943

PSYCHOLOGY

Causes of Absenteeism

Fatigue, friction between individuals, and poor morale contribute largely to time lost, including that blamed on trivial illnesses.

➤ ABSENTEEISM in war plants, an extremely serious problem wherever it occurs, is often due to psychological causes.

They are extremely varied and can be different not only for each plant but for each department.

Time lost may be due to fatigue. Even where the work week is kept to a reasonable length, certain individuals may be putting in more hours than the average. Or they may be working at great tension to keep their individual production high. Rest periods should be enforced for such self-starting and self-pushing workers. Otherwise, they will suddenly go stale and will take time off without warning, disrupting the work of others.

Minor illnesses contribute to time lost. These may be so slight as not to be reported as illness—colds, headaches, indigestion and other such trivial ills will make workers late or off the job for mere fractions of a day, but these fractions add up. Such slight illnesses are often due to fatigue, but often they represent a kind of mental friction in the human machinery.

Petty irritations over working conditions, uncongenial companions, unreasonable or untactful supervisors can all result in such physical upsets. And where nervous tension is high, as it tends to be in wartime, a sharp word spoken thoughtlessly by a supervisor can produce a storm of tears or temper in an employee and with it time off in the infirmary or washroom to recover poise.

Such states of friction may not even be realized wholly by the workers. It is quite possible that a supervisor or trouble-making employee can be disliked without any surface show of the hatred produced. It shows up, indirectly, however, in the time-lost reports. The accident rate is likely to be high, headaches and colds frequent, oversleeping common.

The mechanics of living becomes increasingly difficult in wartime. It is harder without a car to do personal errands, shop for the family, get to the bank, and so on. Anything that can be done to provide community meals, community services, convenient shopping centers will help to reduce absenteeism in war plants.

But probably chief among the psychological causes of absenteeism is low morale. Workers too often these days do not know what they are working on and what it has to do with the war. Necessary secrecy may keep the workers producing a vital part from knowing how it is to be used or where. Production in one plant jumped tremendously when the workers found out that the mysterious plastic something they had been producing was used by General Doolittle in his famous raid on Tokyo. Main contributor to high morale is the feeling that the work being done is of major importance, that the worker's part in the war effort is recognized, and that each individual is considered necessary and missed when he is absent.

Science News Letter, February 27, 1943

United States *soldiers* eat approximately twice as much as civilians.

MEDICINE

TB Research Initiated As Result of Army X-Raying

➤ A NEW tuberculosis research program has been initiated as a result of the chest X-rays for detection of tuberculosis given the millions of men entering the armed forces, Dr. William Charles White, chairman of the National Tuberculosis Association's committee on medical research, announces.

The research is being done under the direction of Dr. Carroll E. Palmer and Dr. Herman E. Hilleboe, of the U. S. Public Health Service, with financial aid from the National Tuberculosis Association.

Student nurses in general hospitals will be the guinea pigs of this war-inspired research. The object is to discover the constitutional factors that decide whether or not a person will be able to resist the tuberculosis germ invasion. Student nurses were selected for the study because they are subjected to frequent contact with actual cases of tuberculosis and can be examined at short intervals during their three years period of training.

Only when the factors of constitutional resistance are known, Dr. White declared, will doctors know how to prescribe the right treatment for each individual case of tuberculosis. At present, the only safe procedure for all cases in the earliest stages is immediate and complete rest in bed.

How to prescribe the right treatment for each man rejected by the armed forces because of very early tuberculosis is, Dr. White said, the most pressing current tuberculosis problem.

Science News Letter, February 27, 1943

A five pound *meteorite* was found in Vermont near South Strafford in August 1942; the first reported for that State.

● RADIO

Saturday, March 6, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. C. C. Little, managing director of the American Society for the Control of Cancer, will discuss "The Scope and Trends of Cancer Research."

Monday, March 1, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"The Chemistry of Courage" will be the subject of the program.

ASTRONOMY

Venus Brightens

Brilliance of planet increases as it nears earth. Surpassed in brightness by Jupiter during March. Anniversary of great astronomer observed.

By JAMES STOKLEY

➤ SOON AFTER the sun sets on March evenings, look to the west and there, low in the sky, you will see a very bright "star." But it isn't really a star, it's the planet Venus, which has been visible for some weeks now. But, as it draws away from the sun it sets later and later after sunset. This, added to the fact that it is swinging around closer to the earth, causes a continual increase in its brilliance, which will continue for some months to come. Venus is in the constellation of Pisces, the fishes. Its magnitude, in the astronomer's scale is minus 3.4. This is much brighter than any of the stars which, unlike the planets, shine by their own light rather than by the reflected illumination of the sun.

Venus sets too early to be shown on the accompanying maps, as these depict the skies a little later—at 11:00 p.m. your local wartime on March 1 and 10:00 p.m. on the 15th. The brightest object seen throughout the evening which they do show is Jupiter. This is in the constellation of Gemini, the twins, high in the southwest. Jupiter's magnitude is minus 1.9, or about a quarter of the brightness of Venus.

One other planet is also seen. It is Saturn, in Taurus, the bull, toward the west. Still fainter, its magnitude is plus 0.3, which makes it scarcely more than a tenth as bright as Saturn.

Dog Star Brightest

The most brilliant star of the March evening is the same one that has held first place through the winter. Sirius, commonly known as the dog star, holds this place. It is in Canis Major, the great dog, low in the southwest, and just to the left of the prominent constellation of Orion, the warrior. Above Sirius is the lesser dog, Canis Minor, with Procyon. It is a very close star, hence its brightness, for it is not really very brilliant.

Sirius is the closest of the conspicuous stars, with a distance of 8.6 light years or about 52,000,000,000,000 (52 trillion) miles. Procyon is at 10.5 light years, or 63,000,000,000,000 miles. In contrast Rigel, the star in Orion just below the three stars that form the belt, is at 543 light years. Since it seems to exceed Procyon in brightness, it must be very brilliant indeed. It is 21,000 times as bright as the sun, while Procyon exceeds that body only some seven times.

Above the three belt stars is another of the first magnitude—Betelgeuse. In the west, in Taurus, the bull, near Saturn, is Aldebaran. Above Taurus is Auriga, the charioteer, in which Capella is located. Pollux, which is one of the twins in the part of the sky where Jupiter is found, is also of first magnitude.

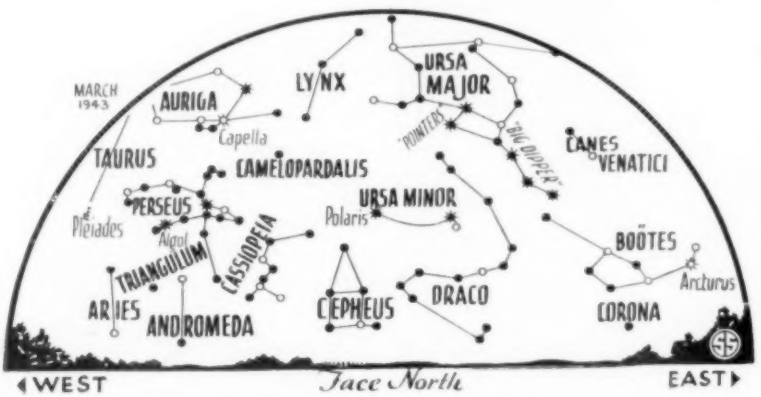
Low in the east, Bootes is coming into view, and this contains Arcturus, still another member of this brilliant class. Spica, in Virgo, low in the southeast, also belongs to it. So does Regulus, in Leo, the lion, toward the south. Thus, with a total of ten first magnitude stars, to which are added three planets also of this brightness or better, the March evening skies afford a magnificent display.

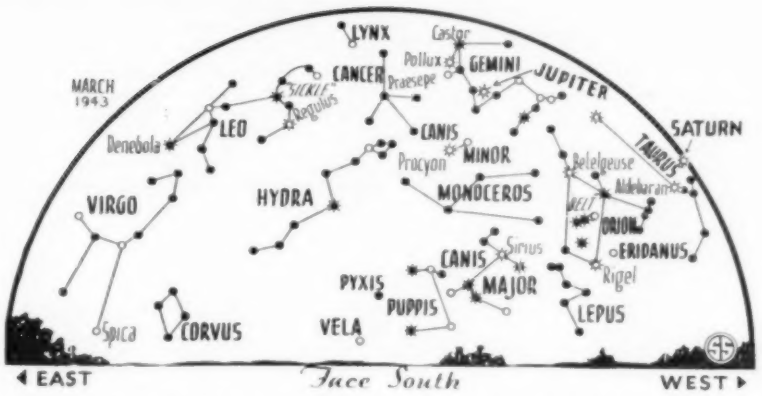
There are several important astronomical anniversaries being celebrated this year. They started with the 300th anniversary of the birth of Sir Isaac Newton, whose theory of gravitation lies at the basis of our modern astronomy. Actually he was born on Christmas day in 1642, which was before England adopted the Gregorian calendar. Correcting for the new style put his tercentenary on January 4, 1943. In May we shall commemorate the 400th anniversary of the death of Nicolaus Copernicus—and of the publication of his great work, which overthrew the earth from the center of the universe. This month marks the 250th anniversary of another great astronomer, though one who is less widely known outside scientific circles. At the end of March, in 1693, James Bradley was born, and as a man he became the third of England's astronomers royal.

His most notable discovery concerned the "aberration of light." To understand what this is, imagine that you are out in the rain. The wind is not blowing, so the drops fall straight down. If you have an umbrella, you hold it directly over your head.

But now you start walking along the street. There is still no wind, the drops still fall straight down. However, you have to hold the umbrella slanted in front of you to keep dry. If you held it the same way you do when still, your legs would get wet, because the drops would come under the umbrella as you moved along. In other words, your motion makes the rain seem to fall slantingly. Often in a train, when it is raining outside, the same effect can be observed. When the train is standing in a station, the falling drops leave vertical streaks on the window. As it starts moving the streaks slant downwards toward the back, and as it gains speed they become more and more nearly horizontal.

In his observations of the stars, Bradley found that they did not stay put, but seemed to shift position a small amount through the year. He found that it depended on the position of the earth in its orbit and realized that it was the same effect as that described above. It is called "aberration" and of course astronomers





must allow for it in calculating positions of the stars.

If the earth did not move, there would be no aberration. But the movement of the earth around the sun causes another effect, which we can see this month. All the planets revolve around the sun in the same direction, but more slowly the farther out they are. Mercury rushes around at about 30 miles a second, Venus at 22, earth at 18.5, Mars at 15, Jupiter at 8 and Saturn at 6.

Perhaps you have been on a fast train, passing a slower one on the next track, and it looked as if the slow train were actually going backwards. In the same way, as the earth passes Jupiter, that planet for a time seems to be going backwards through the sky. The normal motion of the planets we see is from west to east, but during recent months, if you had watched Jupiter, you would have seen it apparently moving westward among the stars. This is called its retrograde movement, and then we were passing it. But now we have swung past, and on the 12th of March Jupiter is stationary. After that he will move eastwards, until we pass him again next year.

Celestial Time Table for March

Mar.	EWT	
2	11:25 p.m.	Moon passes Mars.
4	3:00 a.m.	Moon nearest, distance 225,600 miles.
6	6:34 a.m.	New moon.
8	4:16 a.m.	Moon passes Venus.
11	10:00 p.m.	Jupiter stationary, starts eastward motion.
12	7:21 a.m.	Moon passes Saturn.
13	3:30 p.m.	Moon in first quarter.
15	2:28 p.m.	Moon passes Jupiter.
	10:00 p.m.	Moon farthest, distance 251,500 miles.
21	8:03 a.m.	Sun crosses equator, Spring commences.
	6:08 p.m.	Full moon.
28	9:52 p.m.	Moon in last quarter.
31	1:00 p.m.	Moon nearest, distance 228,900 miles.

Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, February 27, 1943

WILDLIFE

Muskrat Is Tasty Dish

Louisiana swamps produce meat equivalent of about 16,000 steers. Meat resembles squirrel or wild duck. Muskrat also produces fur and perfume material.

➤ MEAT from muskrats, hitherto largely wasted, is not only a very tasty dish but can replace really considerable quantities of more conventional meat, now made scarce by rationing, James N. Gowanloch of the Louisiana Department of Conservation told the eighth North American Wildlife Conference at Denver. One year's product of the lush Louisiana swamps dresses as nearly 6,500,000 pounds, equivalent to the beef in 16,000 dressed steers.

Total muskrat production of North America amounts to more than 16,500,000 animals a year, Mr. Gowanloch said. Louisiana muskrats, a distinct subspecies, are rather smaller than those of the northern states, but at that they dress at about a pound of good meat apiece. Their flavor is described variously as resembling squirrel and wild duck. Actually, the animals are fairly closely related to squirrels, and Maryland muskrats have for some years been sold, especially on the Philadelphia market, as "marsh hare."

In addition to fur and meat, muskrats can produce still another source of revenue for trappers. Just under the skin, near the tail, are two glands which secrete the strongly musk-scented substance whence the animal gets its name. These can be used as a raw material in the perfume industry, to replace formerly imported musk.

Science News Letter, February 27, 1943

"Cheaper Cuts" of Fish

➤ RECOMMENDATION of kinds of fish that do not now reach many American tables, paralleling the boost that the cheaper cuts of meat received a few years ago, was put forth by several speakers at the meeting. Such species as carp, sucker, lake herring, etc., swim in our fresh waters in immense numbers; their flesh is nutritious but they remain neglected, J. Victor Skiff of the New York State Conservation Department pointed out. And even if American housewives began to ask for these cheaper fish they wouldn't be able to get them, because American commercial fishermen have neither the knowledge nor the equipment needed to take them in paying quantities.

One state's program to find the actual food values in these neglected fish and to tell the people about them was described by Fred A. Westerman of the Michigan Department of Conservation. Research is in progress, he stated, to determine the best methods for preparing, preserving, storing and cooking carp, suckers, herring and smelt.

There is also the possibility that one or another of these scaly Cinderellas may turn out to be a rich vitamin source, just as shark livers have recently done. At any rate, the Michigan program includes careful assays for mineral and vitamin contents.

Science News Letter, February 27, 1943

Feeding Fish to Animals

➤ FUR FARMERS, notably those who rear foxes and minks, are also looking toward these coarse-fleshed fish as possible replacements for the meat rations now so difficult to get, Charles E. Kellogg of the U. S. Fish and Wildlife Service told the meeting. (*Turn to page 138*)

PHYSIOLOGY

"Low-Nicotine" Cigarettes Act Like Nicotine-Free

➤ SMOKING CIGARETTES of "low-nicotine" Kentucky burley tobacco produces about the same effect as smoking nicotine-free cigarettes. Both kinds affect the blood pressure and pulse rate much less than ordinary cigarettes.

These research results, reported (*Science*, Feb. 19) by Drs. H. B. Haag and P. S. Larson of the Medical College of Virginia, indicate that nicotine content of this type of tobacco is low enough to warrant further study with an eye toward wider practical use.

Smoke from the "low-nicotine" cigarettes contained less than 10% as much nicotine as that found in the average standard cigarette.

Nornicotine, a substance not normally found in cigarettes, was present but had little effect on results, because only a low percentage is transferred to the smoke. Tests also showed that nornicotine apparently is only about half as toxic as ordinary nicotine.

The scientists checked the results of their analyses by preparing standard nicotine solutions from smoke of both the standard and "low-nicotine" cigarettes. How much of the solutions was needed to kill white mice was then determined. Amounts needed were identical and in accord with the nicotine content calculated by the scientists.

Science News Letter, February 27, 1943

MEDICINE

"Pernicious Inertia" Laid to Low Blood Sugar

➤ A PHYSIOLOGIC cause and a diet and medical remedy for the "pernicious inertia" or fatigue which frequently keeps nervously depressed patients bedridden are reported by Dr. Sidney A. Portis and Dr. Irving H. Zitman of Chicago (*Journal, American Medical Association*, Feb. 20).

The cause of fatigue, these doctors suggest, is a low blood sugar, resulting from too much insulin production by the islands of Langerhans in the pancreas. Constant stimulation of the vagus nerve by the emotional turmoil these neuro-psychiatric patients suffer causes the overproduction of insulin.

To remedy the fatigue condition, the doctors put their patients on a high protein, moderately high fat and relatively high carbohydrate diet, with extra feedings of fruit juice and milk between meals. The carbohydrates are in the more complex form, taking more time for their complete digestion. Sugar and pastries are to be avoided. Besides the diet, the doctors give small doses, three times daily, of atropine to partially paralyze the vagus nerve so that temporary or prolonged stimulation by the emotions will be avoided.

Rapid recovery of four bedridden patients who lost their fatgue and were able to resume their normal routine type of living quickly was achieved by this treatment. The psycho-neurotic symptoms also definitely improved. Although the number of patients treated is small, the Chicago doctors report their results so that other physicians may try the treatment on a larger number from which conclusions as to its value can be drawn.

The work was first reported at the inaugural meeting of the American Society for Research in Psychosomatic Problems.

Science News Letter, February 27, 1943

ASTRONOMY

First Sunspots of New Cycle May Have Appeared

➤ THE FIRST sunspot of the new cycle may have already appeared, nearly a year before the end of the present cycle, it has just been revealed by Dr. Seth B. Nicholson of the Mt. Wilson Observatory. The spot-group was visible for one day only on Dec. 20, 1942, in the relatively high latitude of 32 degrees north, on the sun's surface.

One of the most fundamental characteristics of the solar cycle is that toward the end spots are confined to a belt about 10 degrees wide on either side of the sun's equator. But when spots of the new cycle appear they are much farther from the equator than the old, usually above latitude 25 degrees, as was the case of the short-lived group of Dec. 20.

As a rule, the cycle to which a spot-group belongs can be decided definitely from its magnetic polarity as shown by the preceding and following members as they move across the sun's disk, the magnetic polarity of spot-groups of one cycle being opposite to those of the next. But in this particular case, the preceding spot was so little in advance of the other that it was hard to say whether the group should be classified as having a polarity the same as other spots of this cycle or not.

Science News Letter, February 27, 1943

IN SCIEN

INVENTION

Comfort of Sleeper Planes Increased by Invention

➤ WHEN WE are able to travel by sleeper plane again, we shall find a new seating arrangement that will make for greater convenience and comfort, as well as greater privacy in preparing to retire, thanks to a recent invention on which U. S. patent 2,310,573 has been issued to a Los Angeles aircraft designer, Edward F. Burton. Mr. Burton has assigned rights in his patent to the Douglas Aircraft Company, Inc.

In the new arrangement, there is a double row of seats down the full length of the passenger-carrying section of the fuselage. The aisle seats are narrower than the ones near the wall, which lower their backs to become berths for night travel. Overhead there are upper berths, which lower for use much after the fashion of Pullman uppers. The slightly narrower aisle seats remain permanently in position, behind a curtain, and can be used by the passengers while they are getting ready to turn in, or by the holders of the upper berths if they want to sit up for a while longer than their traveling companions.

Science News Letter, February 27, 1943

ENGINEERING

German Fire Fighters Use New Type Asbestos Soles

➤ NEW ASBESTOS soles prevent recent allied bombing raids from giving German fire fighters a hot foot, according to a report reaching this country from abroad.

Fine asbestos strands are interwoven into sheets. Then the footwear soles are stamped out in various sizes. These are subjected to a hardening process, treated with chemicals and processed.

Emerging from this process almost as hard as ordinary leather, the soles can be nailed or stitched to the shoe uppers.

The asbestos composition wears almost as well as leather, the report claims, and when worn out the old soles can be reclaimed.

Science News Letter, February 27, 1943

NE FIELDS

NUTRITION

Brown Sugar Best, Experiments Show

➤ BROWN sugar's traditional advantage over highly refined white sugar receives scientific confirmation from an unexpected source, in researches on two fungi that cause a serious disease in corn plants. Dr. William E. Wilson, University of Illinois plant pathologist, was trying to grow cultures on a synthetic nutrient medium containing white sugar, and wasn't having much luck with them. When brown sugar was substituted, the fungi throve lustily.

The explanation seems to lie in the presence in brown sugar of biotin, a well-known growth-promoting substance, or something very similar to it. In the refining process practically all of the biotin is removed from white sugar.

The hint came when one of the fungus species, able to manufacture its own biotin, grew well on the white-sugar food substance, while the other species, which cannot form biotin, had to have the brown sugar in order to grow.

Science News Letter, February 27, 1943

METEOROLOGY

Influence of Sunspots On Weather Insignificant

➤ VAGUE CORRELATIONS between sunspots and the weather probably exist, but the weather is affected so much by other factors that the influence of sunspots is insignificant.

This is the conclusion reached by Dr. Seth B. Nicholson of the Mt. Wilson Observatory after a quarter of a century devoted primarily to solar research concerning the much-discussed question of whether the weather can be predicted from sunspot activity. He announced this finding in a lecture at Stanford University.

Dr. Nicholson conceded, however, that conditions upon the sun are not exactly the same when there are many spots as when there are few, and that any change in the sun's radiation will certainly be reflected some way in the weather. Ever since the great astronomer, Sir William Herschel, in 1800 tried to find a correlation between the price of wheat and number of sunspots, not only astronomers, but meteorologists, botanists, and bankers, both professional and amateur, have been trying to find such correlations without much success. Invariably they arrive at the same conclusion as Herschel — more data are needed in order to prove them. This is true in spite of the fact that both the quantity and quality of solar data have vastly increased since Herschel's time.

With regard to the possibility of making short range predictions for particular regions from individual sunspots, Dr. Nicholson was even more emphatic.

"Certainly it is foolish to think that an individual sunspot can in any way produce definite changes in the weather at any particular locality on the earth," he stated.

Science News Letter, February 27, 1943

NUTRITION

Sugar and Starches May Be Unnecessary in Diet

➤ SUGAR, potatoes and other sweet and starchy foods belonging to the carbohydrate class may not be necessary as such in the diet, Dr. Richard H. Follis, Jr., and Dr. William M. Straight, of the Johns Hopkins School of Medicine, report in the *Bulletin of the Johns Hopkins Hospital*.

They found that laboratory rats could live and grow on a purified diet completely lacking in carbohydrate, though containing all essential vitamins, minerals, protein and fat. The rats not only thrived but seemed active and normal in every respect. Microscopical examinations of the tissues of the animals after death showed no significant differences from animals that were fed carbohydrate.

Carbohydrate is needed by the body to furnish energy and for the utilization of fat, but rats apparently can manufacture all they need of this from protein and probably also from fat.

The findings may not, however, apply to man or other species of animals, the scientists point out, since a case has been reported abroad of an attempt to raise a human baby from birth on a "practically carbohydrate-free" diet. At 10 months the child developed ketosis, a condition signifying disturbance of liver function, and the experiment was stopped.

Science News Letter, February 27, 1943

EDUCATION

Women Included in 22 du Pont Fellowships

➤ WOMEN are now eligible for the du Pont postgraduate fellowships in chemistry, first made available in 1918 to aid in building up a corps of trained chemists in this country and continued every year since then with but a single break.

There are 22 of these fellowships, each carrying a stipend of $750. The money is placed at the disposal of a number of universities throughout the United States and there are no strings attached: the university authorities designate the students to receive the funds, and the successful applicants are placed under no stated or implied obligation as to future employment. Appointments are to be made later in the year.

The institutions receiving postgraduate awards are the University of California, University of Chicago, Columbia University, Cornell University, Harvard University, University of Illinois, Johns Hopkins University, Massachusetts Institute of Technology (one in chemical engineering and one in chemistry), University of Michigan, University of Minnesota, University of North Carolina, Northwestern University, Ohio State University, Pennsylvania State College, University of Pennsylvania, Princeton University, Purdue University, Stanford University, University of Virginia, University of Wisconsin, and Yale University.

Science News Letter, February 27, 1943

PHARMACY

Japs Get Monopoly Of Ginseng Growing

➤ THE JAPANESE government is even in the patent-medicine racket. In Korea, it exercises monopolistic control over the cultivation of ginseng, a sarsaparilla-like plant whose root, dried, shaved up and made into a tea, is considered good for whatever ails you by millions of Chinese and Japanese. By making a monopoly of it, and forcing the Koreans to grow it at coolies' wages, the smart little brown men cut a profit both ways.

There was a short-lived boom in the cultivation of the American species of ginseng about a generation ago, but because of low-cost competition in the Orient it collapsed. The American and Asiatic ginsengs look very much alike, but are distinct species.

Science News Letter, February 27, 1943

From Page 135

A serious drawback in the feeding of raw fish is that it tends to destroy the Vitamin B_1 content of all the food eaten, which brings about a serious illness known as the Shastek paralysis. This can be avoided either by cooking the fish, or by alternating raw fish with other foods in the animals' diet.

One fortunate circumstance in the present emergency, pointed out by Mr. Kellogg, is that the principal fur-farming states, grouped around and to the west of the upper Great Lakes, are also the principal sources of fish that can be used for feeding the animals.

Science News Letter, February 27, 1943

NUTRITION

Special Diets Aid Army Specialists

➤ PEAK efficiency for America's fighting men can be obtained only through further nutritional research to provide special diets for specialists in the armed forces, Dr. Charles G. King, scientific director of the Nutrition Foundation in New York, declared.

A major source of aviation accidents, for example, is said on good authority to have been practically eliminated by one of our allies through a change in food practice.

"The fatigue of the aviator is a special kind of fatigue," Dr. King explained, "quite different from the physical exhaustion of a soldier operating a tank."

Dr. King called for more investigation of just what the aviator should eat to best fortify himself against the sudden temperature changes, strain of flying at high altitudes and other constantly changing stresses of combat flying. Extensive use of dehydrated foods has produced new problems to be solved by the nutritionist. Scientists must now seek new information concerning loss of vitamins and protein and the value of the vitamin B group in these food forms.

Importance of food on the production front was demonstrated by a Canadian firm that actually found that it paid in terms of increased production to provide nutritious lunches free to employees.

An infant mortality rate in England 20% under prewar figures, obtained through special provision for feeding children and pregnant or nursing mothers, was cited by Dr. King as indicating what can be accomplished in the civilian population even under war conditions.

Science News Letter, February 27, 1943

MEDICINE

Red Blood Cells Salvaged

Salt solution of cells used to supplement direct transfusions. Must be used within one week after blood is drawn. Method first tried by Detroit Red Cross.

➤ RED BLOOD cells, formerly a waste by-product in the preparation of blood plasma, are now being salvaged. A saline solution of the red cells from blood collected by the Red Cross for the armed forces is being distributed in Detroit to eight Wayne County hospitals, to supplement direct transfusions or use of blood in "banks."

Detroit, among the 31 blood donor centers of the Red Cross in the United States, is the first to use the red blood cells, according to Dr. Warren B. Cooksey, technical supervisor of the Detroit center. While the 31 Red Cross blood donor centers have provided more than 1,500,000 pints of blood plasma for the treatment of armed forces and others, a paradox in the situation has been that, except on a very small scale, the red cells have been separated from the plasma and thrown away, although it is these cells, traveling in millions in the blood, which distribute to all tissues the oxygen they require.

The function of blood plasma, administered to patients, is to restore volume to the circulatory system. Without this volume the remaining blood cells and those being manufactured in the bone marrow cannot circulate.

Blood plasma is prepared for preservation over long periods. No means have been discovered for preserving and shipping red cells in the same manner, but when these cells are put in some favorable solution they can be used within one week after the blood has been drawn from a donor.

Three months ago the Detroit center undertook the preparation of this solution, saving all red cells instead of treating them as waste, and less than a month ago delivery of the solution was undertaken to nearby hospitals.

"This means that the blood banks in these hospitals may be tremendously supplemented," Dr. Cooksey said. "In any general hospital from 50% to 60% of patients needing new blood, either by direct transfusion or from the blood bank, are clearly cases in which the red cell solution serves just as well as the transfusion of bank blood. All red cell solutions are typed, as in direct transfusion blood or that preserved in blood banks.

"Red cells are universally needed in anemia cases. In cases of shock, only blood plasma is needed, for in shock, plasma, the fluid element of the blood, is rapidly absorbed by the body tissues. Use of the red cell solution has proved to be a remarkable aid in the treatment of various types of anemia."

Science News Letter, February 27, 1943

SAFETY

More Hurt in Homes Than on the Job

➤ HOME ACCIDENTS sabotage more man-hours of American war workers than injuries in the industrial plants themselves, Miss Ethel M. Hendriksen of the New York State Health Department told the National Safety Conference in Chicago in urging immediate action to make the home safe for more work production.

Time lost from home accidents last year was sufficient to have built 2,750 bombers or 70 destroyers. Thus home safety is everybody's business and a factor in the war effort, Miss Hendriksen argued.

Even an accident to another member of the family may upset a war worker, cause lost time and lowered efficiency.

With home and farm accidents on the increase, a preventive campaign should be started, Miss Hendriksen urged.

Safety measures include increasing storage space to reduce the clutter under foot. Non-slip floor polishes should be used. Avoid metal edgings. Repair and add railings on stairs.

Especial attention should be given to plans for war and post-war housing, Miss Hendriksen recommends, to see that safety is not sacrificed to speed and cheapness.

Driveways and entrances to homes should permit an unobstructed view. Outside steps and danger spots should be lighted. Pools and steep terraces should be eliminated.

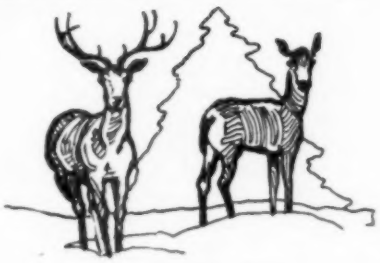
Household furnishings, equipment and appliances must also be considered from the standpoint of safety.

Science News Letter, February 27, 1943

WILDLIFE

NATURE RAMBLINGS

by Frank Thone



Mistaken Kindness

➤ FEEDING HAY to hungry deer in the depth of winter may seem like a most appealing kind of charity; but it is a most mistaken kindness, Arthur H. Carhart of the Colorado Game and Fish Commission told the meeting of the Eighth North American Wildlife Conference.

Grasses and other herbs just aren't the natural food of deer, the speaker pointed out. Many deer have died with their bellies full of good alfalfa and prepared stock feed, he declared. They were found dying after they had had all the alfalfa they cared to eat for two months or more.

Mr. Carhart and his associates discovered by detailed examination of the contents of hundreds of stomachs of animals killed by hunters that the natural food of deer is almost exclusively the buds and tender tip-twigs and leaves—what wildlife men called "browse." More than 97% of the material in the stomachs examined consisted of this browse. About 2% was weeds. Only a fraction of one per cent was grass or hay.

Best wildlife management, therefore, would seem to demand that the money now being lavished on hay and prepared feeds for winter handouts to the deer be saved, and invested instead in brushland that will produce a maximum of natural browse.

The rather general assumption that deer tend to increase in embarrassing numbers because mountain lions, wolves and other predators have been killed off is not necessarily justified, Allan C. Randle of the Utah Department of Fish and Game cautioned his audience. In parts of his state, predators as well as deer are given total protection against hunting; yet despite this near-natural state of affairs the size of the deer herds is becoming a problem.

Mr. Randle did not undertake to state the answer to his riddle; he just placed it before the meeting as a factor in game management that wildlife administrators cannot afford to ignore.

Science News Letter, February 27, 1943

MEDICINE

$1000 Award for Research On Alcoholism During 1943

➤ A PRIZE of $1000 for outstanding research on alcoholism during 1943 is offered by the Research Council on Problems of Alcohol, Dr. I. Ogden Woodruff, chairman of the board of directors, announced.

Any scientist in the United States, Canada or Latin America is eligible for the award. The research must contribute new knowledge in some branch of medicine, biology, or sociology important to the understanding, prevention or treatment of alcoholism. A report on the work and resulting conclusions must be submitted on or before Feb. 15, 1944.

Science News Letter, February 27, 1943

Keeping 'Em Up... Bringing 'Em Down

THE fighting men and the civilian populations of the United Nations are protected with the finest anti-aircraft defense in the world.

The ability of anti-aircraft gunfire to keep enemy planes high—to bring enemy planes down—depends on effective controlling mechanism. Its "eyes" are the Anti-Aircraft Height Finder. Designed by Americans—made by Americans, this intricate observing and computing instrument is part of the "mechanical brain" that makes aiming, fuse setting and firing of anti-aircraft guns a matter of automatic precision.

The Anti-Aircraft Height Finder is but one of many Bausch & Lomb optical instruments used on fighting fronts to hasten Victory. Back of the lines, too, Bausch & Lomb products—such as Microscopes, Metallographic and Spectrographic Apparatus, Contour Measuring Projectors, are speeding production of vital war materials. And in factories American men and women are working longer, more effectively and with less fatigue because their eyesight, corrected through the professional and technical skills of eyesight experts, is kept at top efficiency.

BAUSCH & LOMB

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GENERAL SCIENCE

Soldiers' Ideas Aid Army

Suggestion system is producing hundreds of valuable ideas to speed victory. Used by Army Engineers Corps in many fields.

➤ PERHAPS the most valuable natural resource of America—brains of soldiers in the ranks—is now being mined for valuable war ideas by the Army Engineer School at Fort Belvoir, Va.

Operated on a limited test basis during the past year, the suggestion system is already producing hundreds of ideas which will speed victory. About 11% of the suggestions received have been approved and put to use.

Convinced that the system is practical and of great value in the war, Army officers have now set up a long-time program and inaugurated regular publicity to encourage engineer soldiers to submit their ideas for new devices and methods.

Instead of being passed from hand to hand through "proper channels," ideas can now be sent direct to the Engineer School of the Army. Each suggestion is acknowledged and judged by competent authorities. Source of the idea is deleted, private and brigadier receiving like consideration.

Suggestions from civilians and other branches of the service are also welcomed. No useful idea is too small to report to our democratic Army. When a valuable but undeveloped idea is turned up in the thrill-freighted mail of the Engineer School, it is forwarded with recommendations to research experts for further development.

This suggestion system, unique in the armed forces, is operated as one function of the Research Section of The Engineer School. They list some thirty subjects about which the Army Engineer Corps wants ideas, such as strategy, photography, tactics, methods, camouflage, construction and maps.

Many ideas useful in industry can be adapted to these war uses, Army officials point out. Even the sketch of a daydream, such as the one accepted from a soldier who couldn't write English, may prove helpful in winning the war.

The originator of a useful idea receives full credit and a report on what happens to his brainchild. Army authorities feel that this system will have important morale value: the soldier will realize that he can think and that his thinking may be valuable to Uncle Sam and his fellow fighters.

Science News Letter, February 27, 1943

Don't Delay

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PSYCHOLOGY

How You Can Tell What Baby's Cry Means

➤ FOR A GOOD MANY new mothers the first night home from the hospital with the new baby is an unexpectedly alarming experience. It seemed easy enough to bathe baby in the hospital nursery with the nurse standing by to give directions and help. Changing and feeding and putting baby to bed for the first time with no one but an awkward and probably scared male parent to help may prove quite a trying experience. If the baby sleeps in his mother's room, which he did not do at the hospital, she will be further alarmed when she first hears the grunts and other strange sounds he makes in breathing. Then he cries for the first time, and mother is frankly terrified.

Some advice about baby's crying has just been issued by the Illinois State Medical Society. Baby's crying, it is pointed out, is his most useful way of attracting attention. Since he cannot speak, he cries to tell you what he wants or needs. There are very distinctive cries for different things.

There is the hunger cry which usually comes at regular intervals as he becomes hungry at regular intervals. It is usually a "harsh persistent tone repeated with such fervor that the only time he stops is when he has, momentarily, lost his breath," the medical society bulletin explains.

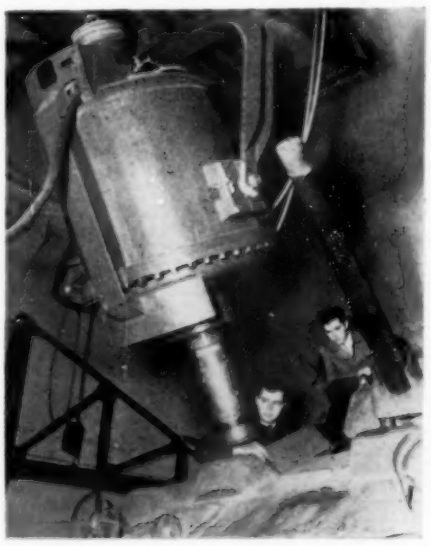
The cry of pain is usually a "sharp, pathetic agonized cry." If due to colic, it usually appears at a regular time, day or night, and the baby may hold his thighs close to his stomach.

A wailing or whimpering cry, with no urgency in the tone and rests between wails or whimpers, is a cry of discomfort. Baby may be uncomfortably wet, or hot or cold, or may have wriggled into a painful position in his crib or gotten his clothes uncomfortably bunched under him. Sun in his eyes or a fly crawling on his face may cause this wailing cry. He may also cry this way if he is overtired from too much playing or too many people handling him just before he goes to sleep.

Science News Letter, February 13, 1943

Over 3,000,000 pounds of scarce *copper*, zinc and nickel will be salvaged from recent collection of old keys.

Continental United States uses less than six pounds of *rice* per person per year, while Puerto Rico uses 128 pounds and Hawaii 177 pounds.



WAR X-RAYS—This 1,000,000-volt X-ray unit built by General Electric is being used to check welded seams in an Army tank. Energy is produced equivalent to $90,000,000 worth of radium. Thicknesses of metal can be inspected in minutes which formerly required hours.

BOTANY

Flower Blooms by Moon

South African member of iris family appears to follow lunar phases in its flowering periods. Morea stands nearly bare-stemmed during new and full moon.

➤ A FLOWER that appears to follow the phases of the moon in its blossom periods, bearing abundant blooms during first and last quarters but standing bare-stemmed or nearly so during new and full moon, is described in the *National Horticultural Magazine* (January).

The plant is a South African member of the iris family known horticulturally as *Morea iridoides;* its iris-like flowers are white, marked with yellow and blue. Its peculiar behavior was not noticed by a botanist but by a psychologist, Prof. Knight Dunlap of the University of California at Los Angeles, one of whose hobbies is gardening. He kept several clumps of Morea, growing in rather diverse habitats, under close observation for over a year.

In southern California, the Morea blooms almost all year round, though it produces fewer flowers during the winter months.

"The Moreas bloom normally within two periods in each lunar month," Prof. Dunlap states. "One period commences on the date of the first quarter, and ends the day before the full moon. The other period runs from the date of the last quarter up to the new moon. In the other phases, (new moon and full moon), there are normally no blossoms. In a blooming quarter, the first blossoms may appear on the first day, or on the second or third day. By the last day of the quarter, sometimes a day or two earlier, the last blossom has withered; the petals either dropped off or curled up. In the winter season, even the best plants may pass one or more bloom quarters entirely."

Apparent exceptions, when flowers appeared during the normal non-flowering periods of full and new moon, appeared to be connected in some way with spells of summer "high fog" which considerably reduced the illumination received by the plants.

What it all may signify, Prof. Dunlap is not prepared to argue on the basis of data now in hand. He hopes that other flower growers, both professional and amateur, will take the trouble to make careful observations as opportunity may offer.

"Meanwhile," he adds, "I am satisfied to present evidence confirming the principle familiar to students of mythology, namely: Ancient superstitions often have foundation in fact."

Science News Letter, February 27, 1943

MEDICINE

Agglutinins Aid Diagnosis

➤ DISCOVERY of substances in the blood, called cold agglutinins, that may help to segregate some of the cases of atypical pneumonia prevalent these days is announced by Dr. Osler L. Peterson, Dr. Thomas Hale Ham and Dr. Maxwell Finland, of Harvard Medical School and Boston City Hospital (*Science*, Feb. 12).

These now prevalent kinds of pneumonia are generally called atypical pneumonia, because the disease is different from the pneumonia caused by the pneumococcus germ and is not caused by any known pneumococcus. Some cases may be caused by a virus. Until germs causing the atypical pneumonias are definitely known, the development of the cold agglutinins in the patient's blood may, the Harvard scientists suggest, serve as a criterion for segregating them.

Cold agglutinins, or autohemagglutinins as they are also called, develop very rarely in ordinary pneumonia and have been observed in a few patients with liver or blood diseases. The word cold describes the temperature at which the agglutinins act and does not refer to the common cold. The only infectious disease besides atypical pneumonia in which they have been found regularly is African sleeping sickness, known medically as trypanosomiasis.

Science News Letter, February 27, 1943

WANTED

ANOTHER POST WAR PRODUCT

AND A PRODUCTION EXPERT TO MAKE IT!

Before the war halted production of "non-essentials," we manufactured and marketed, for several years, a phenomenally successful line of small electrical household appliances. And we plan to continue as soon as the war is won.

Our customers—electrical and hardware wholesalers, retailers, and four of the largest national chain groups—believe in us. They bought over $1,500,000 worth of our products yearly, and that volume was increasing by 25% annually when the war hit us.

For the future, we have big plans—and here's why. Our outstanding strength is a sales, promotional and advertising organization that doesn't take its hat off to any other in American business. What we want to do is harness this organization to a bigger job in the post-war years. We have enough money to handle an extra million in sales, and our credit is excellent. We want to branch out by broadening our line and increasing our volume.

That's where you may fit into our picture. Specifically, here's what we're looking for:

1—A new electrical household or hardware product that can add another million or two to our volume. It might be of metal, or it might be of plastic. It should be something for the retailer to sell to the housewife—something for the millions of new homes to be built after the war, as well as for present homes.

2—An outstanding electrical engineering, research, product development, and production expert who can equal, in the calibre of his work, the selling power of our organization. He may even have a plant of his own that would be useful in manufacturing the new product for which we are searching.

In your case, maybe those two points go together. You may have the product we're looking for, and you may be the man, too. Perhaps you just have a product that's a "natural," and that you'd like to sell. Or maybe you're the man we need, but merely have ideas for new products that deserve development.

If this advertisement applies to you in any way, let's talk it over . . . confidentially. What each of us has to offer may make a grand combination that will benefit us both.

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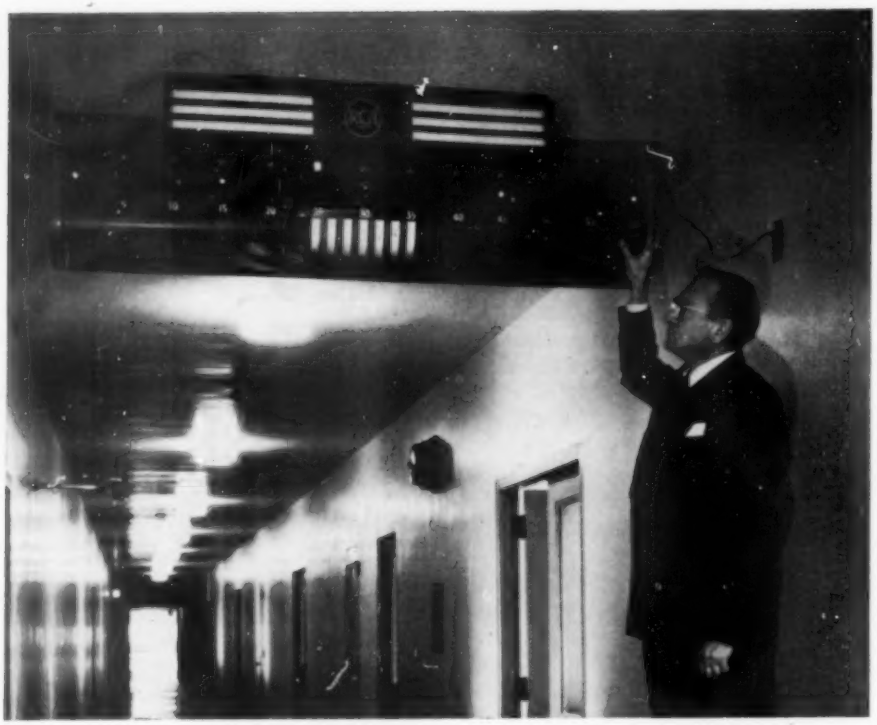

ELECTRONIC CLOCK—The more than 170 electronic tubes in this modern clock count the 60-cycle pulsations of electric current and show the seconds, minutes and hours by lights. The seconds are ticked off on the line shown from one to 60; other lights indicate the hours and minutes. The clock has no moving parts—no motor, wheels, main spring or hands. With the clock is shown Dr. V. K. Zworykin, associate director of RCA laboratories, who with his staff developed it.

ENGINEERING

Epic of Alaska Highway

Airplane reconnaissance pioneered way and "guts and tractors" built Alcan road. Work started only year ago. Engineer regiments succeeded under hardships.

➤ OLD-TIMERS in Alaska and the mountain country of western Canada declared that a road couldn't be built where the Army Engineer Corps planned to put it, but airplane reconnaissance found a way through, and "guts and tractors" built the road.

This, in a one-sentence summary, tells the story of the building of the Alcan Highway, which was presented at greater length before a joint meeting of the American Philosophical Society and the Geographical Society of Philadelphia by Major Roswell P. Rosengren, chief of the Office of Technical Information.

The story of the road is a saga of decision, speed and determination. Only a little more than a year ago, on Feb. 2, 1942, Brig. Gen. C. L. Sturdevant of the Engineers was told that a road was to be built and instructed to bring in preliminary plans. Forty-eight hours later he submitted them. The General's Valentine from the Army High Command was a directive on Feb. 14 to proceed with the project.

The Canadian government immediately gave informal permission for survey parties to go to work in their territory, and this was made formal on Feb. 26. By March 10, American troops were arriving at the railhead at Dawson Creek, B. C., in temperatures around 40 degrees below zero Fahrenheit. Further contingents reached other construction centers during April.

The route selected was criticized by local men who thought they knew the country because a considerable part of it apparently would have to traverse a 6,000 foot plateau. Actually, the airplane parties found a route no part of which had to climb above a 4,000 foot altitude. All of it lies in timbered country.

Several Engineer regiments (one of them colored) tackled the job which looked like one to daunt Hercules. Each regiment moved up "heavy artillery" in the form of 44 big tractor-bulldozers, with scores of trucks, power shovels, piledrivers and other machinery; and of course the omnipresent, indispensable jeeps. The country fought the invaders with miles and miles of sullen muck and millions of mosquitoes. The road, as one writer put it "was built as in battle, with every hardship except bullets."

And the Corps of Engineers, U. S. Army, won their fight. The Alcan Highway is now carrying supplies to Alaska, now the northwest defense bastion of America—and presently a sally-port for irruption upon the hostile fringe of Asia.

Science News Letter, February 27, 1943

Fire-wood cured for nine to twelve months produces from 10% to 35% more heat than green wood.

The rubber-yielding *guayule* plant, discovered in Mexico in 1852, was for years considered just a poor relation of the sunflower family.

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MEDICINE

Tantalum Patches Skulls

Plates of rare metal used to repair head wounds. Experiments indicate method will be of value in war medicine. Metal can be cut and molded at operating table.

➤ USE OF the rare metal, tantalum, for plates and disks to replace pieces of skull lost in war wounds or to cover skull defects from such wounds is proposed by Lieut. Robert H. Pudenz, Medical Corps, U. S. Naval Reserve (*Journal, American Medical Association,* Feb. 13).

Success with this use of tantalum in laboratory experiments is reported by Lieut. Pudenz, who also quotes as yet unpublished reports from other surgeons who have used it successfully on some human patients.

Tantalum is a "bluish white metal resembling steel in its physical properties and glass in its chemical characteristics," Lieut. Pudenz states.

An important advantage of the metal for surgical use is the fact that it can be drawn into wire or rolled into sheet while cold. Because it is easily malleable, the surgeon can cut and mold a piece of tantalum to the desired shape at the operating table.

In addition, tantalum does not corrode, is not poisonous, does not cause any adverse reaction with the body tissues and is nonabsorbable. It is heavy, with an atomic weight about three times that of iron, but because it can be used in a thin sheet its weight is apparently not a disadvantage. None of the patients who have had skull defects repaired with it have, so far as is known, felt any sensation of heaviness or of pressure.

Tantalum has previously been used by a few other scientists for bone plates and screws and wires in both animal and human tissue. Bone, cartilage, celluloid and the metal, vitallium, have all previously been used to repair skull defects. Vitallium has recently found most favor with brain surgeons, but tantalum has the advantage of being easily malleable.

Science News Letter, February 27, 1943

NUTRITION

Progress Hinges on Food

High nutritional standard would play important part in post-war reconstruction. Tests show good diet produces improvements in health and longevity.

➤ RECONSTRUCTION in the post-war world, and advances to new achievement in civilization and culture, will depend to a very considerable extent on a high nutritional standard—higher than was ever known in prewar days, Dr. Frank G. Boudreau, executive director of the Milbank Memorial Fund, indicated at the midwinter meeting of the American Philosophical Society.

The advantages of abundant nutrition over just-sufficient feeding have been repeatedly demonstrated, both in sociological field observations and in controlled experiments, Dr. Boudreau pointed out. Even with animals the results are beyond argument. Colonies of laboratory rats, descended from long lines of sleek and well-fed ancestors, immediately showed improvements in health, vigor and longevity when they were given extra feedings of vitamins and other health-making factors.

As negative evidence, Dr. Boudreau cited the cultural stagnation of the late middle ages and early modern times, when famines occurred on the average of seven times in a century, keeping whole populations hungry as much as a tenth of the time. When people are constantly preoccupied with the problem of just getting enough to eat, they are not likely to give much thought to the arts, sciences and humanities, he contended.

If we are to move forward into the gleaming civilization that forward-looking statesmen see for us beyond the present smoky horizon, we shall have to see to it that the American people, to say nothing of the rest of the world, receive far better nutrition than the average American prewar diet represented, the speaker declared.

Prewar consumption, on the basis of careful studies by the Food and Nutrition Board of the National Research Council, showed some astonishing lacks, for a people who boasted themselves the best fed in the world. From the diet designated by the NRC studies as best adapted, the following deficiencies were noted: 59% in leafy green and yellow vegetables, of 45% in milk, 28% in citrus fruits and tomatoes, 25% in beans, peas, and nuts, 17% in eggs, 14% in potatoes, 4% in meat, poultry and fish, and 2% in flour and other cereals. There was an excess production of 8% in butter and other fats and of 15% in sugar.

To right this, even for the United States alone, will require a reorientation of our agriculture that is not much short of a revolution.

Science News Letter, February 27, 1943

ENGINEERING

Smoke Generator Developed For Camouflage Purposes

See Front Cover

➤ PUFFING smoke worse than an old sidewheeler, a new smoke generator has been developed for camouflage purposes. Using liquid material more efficiently than in the past, it covers areas densely and economically. The smoke blanket hangs over the earth for long periods of time, simulating natural clouds and fog.

Dr. Irving Langmuir of the General Electric Research Laboratory is shown on this week's SCIENCE NEWS LETTER cover demonstrating the device which he and Vincent J. Schaefer developed through the National Defense Research Committee for the Chemical Warfare Service.

Science News Letter, February 27, 1943

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TEC-W-1614

• New Machines and Gadgets •

⚙ *NEW CONTAINERS to package chemicals are necessary because of the shortage of steel drums. Satisfactory substitutes developed include fiber drums, pulpboard kegs, slack barrels, glass bottles, jars and carboys, and an asphalt-lined paper bag.*

Science News Letter, February 27, 1943

⚙ *A COLLAPSIBLE, adjustable accessory seat for passenger vehicles has just been patented. Designed for children, the seat is small and elevated so youngsters can comfortably look out of the window. A device securely holds the accessory seat in position atop an ordinary seat.*

Science News Letter, February 27, 1943

⚙ *FLUORESCENT TREATED plastic "envelopes" together with near-ultraviolet rays, make it possible to read ordinary printed matter such as pilot charts and maps without destroying night vision. The unseen ray directed through the fluorescent transparent envelope emits a glow sufficient to read material under the plastic.*

Science News Letter, February 27, 1943

⚙ *AN ILLUMINATED razor handle recently patented illuminates the face at the point of contact with the blade. A small electric bulb in the end of the handle furnishes light without glaring in the shaver's eyes.*

Science News Letter, February 27, 1943

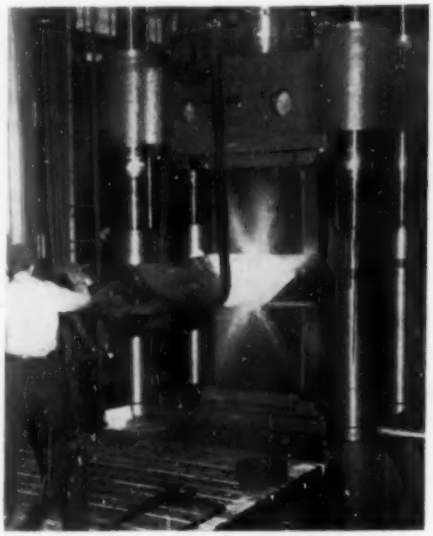
⚙ *A TELECHRON clock, a self-starting type, placed in circuit with the compressor of an oil burning furnace will register the number of hours and minutes the furnace is in operation. By knowing the rate of consumption of oil the home owner can keep daily consumption within the rationed oil supply.*

Science News Letter, February 27, 1943

⚙ *A VERMIN TRAP recently patented kills house insects and bugs with an electric shock from the house current. Vermin getting near the open top receive a shock which causes them to fall in. Then they get another shock if they try to escape.*

Science News Letter, February 27, 1943

⚙ *MOTOR-DRIVEN hydraulic pumps power an open forging press being used for production of military equipment. The new press of 1000-ton capacity is*



said to be cheaper to operate than the usual steam hydraulic press now in use and cheaper to install because there is less auxiliary equipment. Pressure is built up fast and then the ram reverses with smooth, shockless action. A hot steel billet is shown being forged between anvil blocks.

Science News Letter, February 27, 1943

⚙ *TRANSPARENT packaging material originally developed for food containers now protects airplane engines. A bag is slipped over the engine, air within is removed by suction and the bag heat-sealed. This prevents rusting during shipment and storage and also saves 50 to 75 man-hours ordinarily needed to grease and degrease an engine.*

Science News Letter, February 27, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 145.*

• Glances at New Books •

➤ UNITED STATES AT WAR, a special publication of the *Army and Navy Journal* ($3), is a vivid record, in print and pictures, of the first year of American participation in the present conflict. The stories of the shares borne by all branches of the service, by all groups of citizens, by all types of industry, are told by topmost leaders, headed by Commander-in-Chief F. D. Roosevelt himself. This volume may therefore be taken as thoroughly authentic and authoritative.

Science News Letter, February 27, 1943

➤ BIOLOGY SEASON BY SEASON sets forth in its title the unique and highly interesting plan of its contents: to enable the teacher to use biological phenomena observable at the moment in illustration of the general principles to be inculcated. Intended primarily for use in Catholic secondary schools, it is the work of Sister Mary Anthony Payne. (*American Book Co.*, $2.32 Textbook)

Science News Letter, February 27, 1943

➤ MEN hoping to specialize in radio, aviation, mechanics and allied fields after entering the service will be interested in FUNDAMENTALS OF ELECTRICITY by Lester R. Williard (*Ginn and Company*, $1.24). Written according to recommendations by the War Department.

Science News Letter, February 27, 1943

Books of the Week

ARCHAEOLOGICAL RESEARCHES IN THE NORTHERN GREAT BASIN—L. S. Cressman—*Carnegie Institution*, 260 p., illus., $3, paper and $4, cloth.

ELEMENTS OF RADIO—Abraham Marcus and William Marcus—*Prentice-Hall*, 699 p., illus., trade ed., one vol., $4, two vols., $2.45 each; text ed. for schools only, one vol. $3.20; two vols., $1.96 ea. Prepared under editorship of Ralph E. Horton.

THE GARMENT OF GOD: Influence of Nature in Human Experience—John C. Merriam—*Scribner's Sons*, 162 p., $2.

INSECT INVADERS — Anthony Standen — *Houghton Mifflin*, 228 p., illus., $3.50.

JULES VERNE—George H. Waltz, Jr.—*Holt*, 223 p., $2.50.

MACHINE SHOP SCIENCE AND MATHEMATICS: Related Science and Mathematics for Vocational Classes—Joseph J. Eaton and Albert V. Free—*Manual Arts Press*, 187 p., illus., $2, cloth.

AN OUTLINE OF WEATHER SCIENCE — Charles William Barber—*Pitman*, 248 p., illus., $2.50.

QUESTIONS AND ANSWERS FOR MARINE ENGINEERS: Book III — Auxiliaries — H. C. Dinger, comp. — *Simmons-Boardman*, 139 p., $1.

THE RING-NECK SNAKES, GENUS DIADOPHIS—Frank Nelson Blanchard—*Chicago Academy of Sciences* (Bulletin of the Chicago Academy of Sciences), 144 p., illus., $1.25.

SLAVERY IN CHINA DURING THE FORMER HAN DYNASTY 206 B. C.—A. D. 25—C. Martin Wilbur—*Field Museum*, 490 p., $4.